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| EXAMINER |
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LEUNG, JENNIFER A

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1764

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/669,666 | Applicant(s) BEIERLE, FRED P. | |
| | Examiner Jennifer A. Leung | Art Unit 1764 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 10-21 in the reply filed on January 30, 2006 is acknowledged. Applicants have further amended claim 10, by the insertion of the limitation "including organic matter" in order to overcome the restriction requirement. However, the restriction requirement between the process claims and the apparatus claims is still deemed proper. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process of producing charcoal from biomass input material can be practiced by another and materially different apparatus, such as the apparatus disclosed by Fetters et al., FIG. 1. (e.g., process claim 1 does not require any apparatuses for production of fuel gas). In addition, the apparatus as claimed can be used to practice another and materially different process, such as a process for the production of fuel gas (e.g., process claim 1 is only concerned with the production of charcoal).

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Objections

3. Claims 11, 13, 14 and 17 are objected to because of the following informalities:

In claim 11, line 2: "having" should be deleted.

In claim 11, line 9: "containes" should be changed to --contains--.

Art Unit: 1764

In claim 13, line 5: "conditione" should be changed to --conditioner--.

In claim 14, line 10: "(117" should be changed to --(117)--.

In claim 17, line 2: "reservior" should be changed to --reservoir--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

Regarding claim 10, it is unclear as to whether applicant is attempting to positively recite the "biomass" in the claim limitation of, "a reaction chamber *receiving* biomass" (line 2) because it is unclear as to whether the reaction chamber must simply be capable of receiving biomass, or whether the reaction chamber must "contain" the biomass (in which case would be a positive recitation of the biomass). Thus, it is further unclear as to whether the "charcoal production bed" formed by the biomass is to be considered an element of the apparatus. In addition, it is unclear as to the relationship between "a single reaction chamber" (line 6) and "a reaction chamber" set forth in line 2. Also, it is unclear as to the relationship between "a pyrolysis zone... at the intermediate layer" (line 6) and "an intermediate layer pyrolysis zone" set forth in lines 4-5.

Art Unit: 1764

Also, it is unclear as to the relationship between “an intermediate layer” (line 8) and “an intermediate layer” set forth in lines 3-4. Also, it is unclear as to the structural relationship of the “outlet means” (line 9) to the other elements of the apparatus. Furthermore, the language of the claim in lines 9-18 is directed to a method limitation which renders the claim vague and indefinite because it is unclear as to the particular structural limitations applicant is attempting to recite, since the “fuel gas output” (line 9), the “heat exchanger tank exhaust” (lines 10, 12), the “demister input/output” (line 14) and the “fuel conditioner input/output” (lines 15-17) are not considered elements of the apparatus (i.e., the process streams are not elements of the apparatus, whereas the conduits or piping that carry the process streams would comprise elements of the apparatus). Furthermore, it is unclear as to the relationship between the “heat exchanger tank (60) exhaust” in line 11 and the “heat exchanger tank exhaust (71)”.

Regarding claim 11, it is unclear as to the structural relationship of both the “water or coolant supply inlet” and the “water or coolant discharge” (line 2) to the other elements of the apparatus. Also, it is unclear as to the relationship between the “heat exchanger tank” (line 3) and the “heat exchanger tank” set forth in claim 10, line 11. Also, it is unclear as to the relationship between the “demister means” (line 6) and the “demister means” set forth in claim 10, line 13. Also, it is unclear as to the relationship between “a demister input” (line 6) and “a demister input” set forth in claim 10, lines 13-14. Also, it is unclear as to the relationship of the “bubble forming means” (lines 9-10) to the “bubble forming means” set forth in claim 10, lines 15-16. Also, “the fuel conditioner input means” (line 10) lacks proper positive antecedent basis. Also, it is unclear as to the relationship between “a fuel means” (lines 12-13) and the “fuel means” set forth in claim 10, line 16.

Art Unit: 1764

Regarding claim 12, it is unclear as to the relationship between the “heat exchanger means” (line 2) and the “heat exchanger means” set forth in claim 1, line 10. Also, “the heat exchanger water or fluid content” (lines 4-5) lacks proper positive antecedent basis.

Regarding claim 13, the recitation of “fuel means (120) includes but is not limited to diesel, peanut oil, vegetable oils and other combustible substances” (lines 3) is considered vague and indefinite because it is unclear as to the scope of the limitation. Also, it is unclear as to what structural element is being recited by, “engine means (60) combustion/ pump means (140)” (line 4). Also, it is unclear as to the relationship between “a storage or combustion at an engine means” (line 6) and “a storage or combustion at an engine means” set forth in claim 10, line 19.

Regarding claim 14, it is unclear as to the structural limitation applicant is attempting to recite in lines 8-9 because the “fuel conditioner output” is not considered an element of the apparatus. Also, it is unclear as to the relationship between “a fuel conditioner means input” (line 4) and “a fuel conditioner means input” set forth in claim 10, line 15. Also, it is unclear as to the relationship between “a fuel conditioner means” (lines 6-7) and “a fuel conditioner means” set forth in claim 10, line 16. Also, it is unclear as to the relationship between “a grid” (line 9) and “a grid” set forth in claim 11, line 11. Also, it is unclear as to the relationship between “a plate” (line 10) and “a plate” set forth in claim 11, line 11.

Regarding claim 15, it is unclear as to the structural limitation applicant is attempting to recite in lines 2-3 because the “fuel conditioner output” is not considered an element of the apparatus.

Regarding claim 16, “the conditioned fuel gas” (line 2) lacks proper positive antecedent basis. Also, “the engine intake manifold” lacks proper positive antecedent basis.

Art. Unit: 1764

Regarding claim 18, the “chemicals” and the “potassium” lack proper positive antecedent basis. Also, it is unclear as to what process applicants are attempting to recite.

Regarding claim 19, “the removal means” (lines 8 and 9) lacks proper positive antecedent basis. Also, “the charcoal removal system” (lines 8-9) lacks proper positive antecedent basis.

Regarding claim 21, “the charcoal collection means (41) arena” lacks proper positive antecedent basis. Also, the “heat exchanger ports (264)” lacks proper positive antecedent basis. Also, the “charcoal removal system” (line 3) lacks proper positive antecedent basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga (JP 2000-152799) in view of Fetters et al. (US 4,530,702) and Funk (US 5,104,419).

As best understood, Matsunaga (FIG. 1; Machine Translation) discloses an apparatus comprising a reaction chamber (i.e., pyrolyzer 1) receiving biomass (i.e., via supply way 2); the chamber 1 having an outlet means (i.e., via supply way 6), wherein the fuel gas output from the reaction chamber 1 is directed to a heat exchanger means (i.e., a recuperator 3) that produces an exhaust (i.e., contained in supply way 8); the heat exchanger exhaust 8 being directed via supply way 10 to a fuel conditioner means (i.e., methane fermentation tank 9) containing a bubble forming means (i.e., a diffuser 12); and wherein the fuel conditioner exhaust (i.e., contained in supply way 14) is directed to a storage (i.e., a gas holder 5) or combustion at an engine means

Art Unit: 1764

(i.e., a gas engine 15, with generator 17).

Matsunaga is silent as to the reaction chamber 1 being configured with an outlet means 6 that allows for the fuel gas generated during the pyrolysis of the biomass 2 to move in a downward direction through the charcoal bed in the reaction chamber 1.

Fetters et al. (FIG. 1; column 3, line 44 to column 6, line 65) teaches a reaction chamber 11 receiving biomass (i.e., via hopper 16); the reaction chamber 11 having an outlet means (i.e., via exit line 17) that allows for the fuel gas generated during the pyrolysis of the biomass (i.e., within pyrolysis zone 23) to move in a downward direction through the charcoal bed 27 and out of the reaction chamber 11.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute the reaction chamber of Fetters et al. for the reaction chamber 1 in the apparatus of Matsunaga, on the basis of suitability for the intended use thereof, because such an outlet configuration allows for the production of pyrolysis gases containing a low quantity of tar, as taught by Fetters et al. (see abstract).

Matsunaga is further silent as to the apparatus comprising a demister means.

Funk teaches a demister means (i.e., knock out drum 41; column 9, lines 25-30).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a demister means in the modified apparatus of Matsunaga, on the basis of suitability for the intended use thereof, because the demister means allows for any remaining moisture in the pyrolysis gas to be removed, as taught by Funk.

6. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga (JP 2000-152799) in view of Fetters et al. (US 4,530,702) and Funk (US 5,104,419),

Art Unit: 1764

as applied to claim 10 above, and further in view of Beierle et al. (US 4,883,499).

As modified by Fetters et al., above, the reaction chamber (see Fetters et al., FIG. 1) comprises a bed having an upper layer (i.e., comprising fuel pellets **25**) having an upper layer center relative to the upper layer proximal to a reaction chamber wall and proximal a reaction chamber top **13**; wherein biomass is introduced into the upper layer **25** by means of a funnel means (i.e., hopper **16**) which directs biomass toward the upper layer center.

The combined teachings of Matsunaga, Fetters and Funk, however, is silent as to the provision of a charcoal discharge funnel means for directing charcoal away from the walls of a charcoal removal means and towards the charcoal removal means (e.g., to an exit duct **34** shown in FIG. 2 of Fetters et al.).

Bierle et al. teaches a charcoal discharge funnel means (i.e., cone shaped portion **26** in FIG. 1; shown as cone **124** in FIG. 7) for directing charcoal away from the walls of a charcoal removal system and towards the removal means (i.e. towards an opening **28**; FIG. 1). The slope of the charcoal discharge funnel means **26** is greater than 45 degrees, and for example, 60 degrees (see column 3, lines 4-13).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a charcoal discharge funnel means to the modified apparatus of Matsunaga, on the basis of suitability for the intended use thereof, because the claimed charcoal discharge funnel means is conventional in the art, as evidenced by Bierle, and it is well known in the art that the funnel shape allows for the improved discharge of product with the help of gravity.

Although the specific slope of the biomass introduction funnel means **16** is not stated in Fetters et al., it would have been obvious for one of ordinary skill in the art at the time the

Art Unit: 1764

invention was made to select an appropriate slope for the funnel means in the modified apparatus of Matsunaga, on the basis of suitability for the intended use thereof, because a change in slope hence the shape of the funnel would have involved routine skill in the art, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

7. Claims 11-18 and 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not disclose or adequately teach the claimed apparatus further comprising a fuel conditioner means that contains a fuel means (e.g., diesel, peanut oil, vegetable oils and other combustible substances, as invoked by 35 U.S.C. 112, sixth paragraph; see specification page 13, lines 21-23), wherein the output from the demister is directed beneath the fuel means via the claimed bubble forming means.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung
May 22, 2006 *JAL*

Alexa Doroshenk Neckel
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PRIMARY EXAMINER